

Soft Costs: PV Markets and Regulations

Solar Analysis and Planning for Institutions

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Agenda

- **Goals for this Presentation**
- **Types of Activities and Audiences**
- **Scope of *Solar Analysis and Planning for Institutions* Portfolio**
- **Rationale and Overview of *Major Programs***
- **Q&A**
- **Rationale and Overview of *FOAs and Projects***
- **Q&A**
- **Conclusion - Discussion**

Goals for this Presentation

- **Reviewers will:**
 - Become familiar with SETO's *Solar Analysis and Planning for Institutions* portfolio, our partners, intended audiences, and impacts
 - Understand SETO's strategy around *Solar Analysis and Planning for Institutions*
 - Help SETO identify areas for continued innovation and improvement

Types of Activities and Audiences

Desired Outcome: Institutions have the necessary analyses and planning to facilitate the growth of solar energy and maximize solar's benefits to stakeholders

- ***Solar Analysis and Planning***

- **Activities** can include modeling, techno-economic analyses, data analytics, energy market analysis, training, facilitated dialogues with stakeholders, workshops, webinars, etc
- **Outputs** can include analytical tools and models, guidebooks, training materials, checklists, reports, journal articles, white papers, memos, factsheets, presentations, websites, maps and data visualizations
- **Does not include** developing or recommending laws/regulations, lobbying

- ***Institutions***

- Local governments (cities, counties, regional planning entities)
- State governments (regulators, legislators, agencies)
- Utilities and grid operators (IOUs, coops, munis, ISO/RTOs)
- Non-profits (universities, community groups)
- For-profits (energy industry, consulting groups, etc)

Soft Costs Strategic Areas: *Solar Analysis and Planning for Institutions*

Strategic Areas Relevant to SETO Analysis and Planning for Institutions Work

BUSINESS INNOVATION

Developing solar finance and business solutions to expand access to capital and accelerate market growth



NETWORKING AND TECHNICAL ASSISTANCE

Empowering state and local decision-makers through timely and actionable resources, peer networks, and technical assistance



DATA ANALYSIS

Harnessing big data analysis and technical solutions to support the many stakeholders involved in solar deployment



TRAINING

Training an innovative solar workforce to enable the solar industry to meet growing demand



Solar Analysis and Planning for Institutions Portfolio

- **Major Programs**

- Solar Energy Innovation Network (SEIN)
- SolSmart
- National Community Solar Partnership
- Technical Assistance for Public Utility Commissions (Grid Modernization Lab Consortium)

- **FOAs and Projects**

- FY19 SETO FOA - Balance of Systems Soft Costs Reduction projects
- States Energy Strategies (SEED2-SES FOA, FY17-19)
- Solar and Value of Real Estate projects
- Future of Electric Utility Regulation (Grid Modernization Lab Consortium)

Solar Energy Innovation Network

The [Solar Energy Innovation Network](#) is a collaborative research program that supports multi-stakeholder teams to research and share solutions to real-world challenges associated with solar energy adoption.

Approach

- Teams identify local and regional challenges, and receive technical and financial assistance to formulate and test innovations, and validate new models
- Teams meet in person for several multiday workshops to further refine solutions and learn from other teams
- Research and innovative solutions shared through peer network and stakeholders nationally

Objective

- Develop innovative solutions that make solar energy adoption easier and enable adoption by stakeholders across the United States facing similar challenges.



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Lawrence Berkeley
National Laboratory



Start-End Date: 7/2017-9/2021

Funding: \$11,000,000

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SOLAR ENERGY TECHNOLOGIES OFFICE

SEIN Round 1 (January 2018 – June 2019)



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Round 1 Topics

- **Solar Energy Options Analysis and Systems Design**
 - Identifying the grid impacts and costs anticipated for various penetration levels of solar and other DERs
- **Grid Flexibility and Resiliency with Solar + Other DERs**
 - Improving grid flexibility and resiliency through advanced siting and operations of solar + other DER

Activities

- Identified solar potential on a city-wide scale to inform planning
- Modeled the economics of novel applications of PV, such as pairing it with electric vehicle charging at workplaces or with storage for peak demand reduction
- Assessed the resiliency value of DERs and other value streams.
- Produced a distribution system modeling tool to support electric cooperative decisions by identifying the benefits and impacts of adding DERs to specific locations on the grid

Products and tools from Round 1 will soon be available at
<https://www.nrel.gov/solar/solar-energy-innovation-network.html>

SEIN Round 2 (February 2020 – April 2021)



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Commercial-Scale Solar

- Projects address barriers and how to reduce the costs of solar energy for the commercial-scale solar market
- Commercial buildings (e.g., offices, warehouses, hospitals, hotels, retail stores, schools, or higher-education facilities) and multifamily residential buildings.
- Includes both rooftop PV and community solar.

Solar In Rural Communities

- Projects support cooperative utilities, counties and other rural community stakeholders by analyzing and testing the potential for solar PV to improve energy affordability and resilience in rural contexts.

Both topics include solar in combination with other technologies, such as storage, and in micro-grids.

SEIN Round 2 Selected Teams

Lead Organization	Title
Commercial-Scale Solar	
Groundswell, Inc.	Shared University and LMI Community Solar + Storage Micro-grid (Georgia)
Sustainable CUNY of the City University of New York	Overcoming Barriers to Community Solar + Storage
Tampa Bay Regional Planning Council	Integrating Resilience into Solar Assessments
City of Reno	Valuing Resilience in Solar + Storage Municipal Procurement
Solar in Rural Communities	
Rhode Island Office of Energy Resources & Rhode Island Division of Public Utilities and Carriers	Managing Solar Interconnection Costs with Storage in Rural Rhode Island
Clean Energy Extension at the University of Massachusetts Amherst	Community-Informed Proactive Solar Siting and Financing
Cliburn and Associates, LLC	Solar-plus Procurement for Rural Co-ops (Colorado, Georgia, and New Mexico)
East River Electric Power Cooperative and University of Minnesota	Analyzing the Flow of Solar Cost-Revenue Streams Across Utilities (Minnesota and South Dakota)

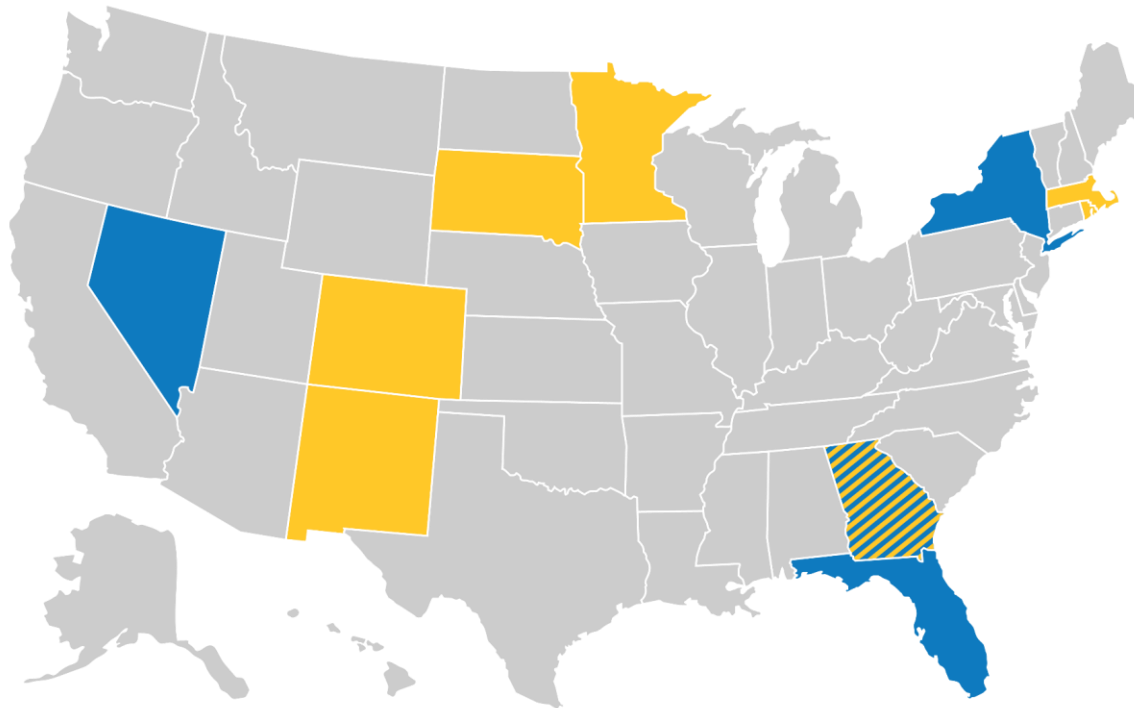
SEIN Round 2 Team Members by Sector

Utilities	Industry	Non-Profits and Researchers	Universities	State and Local Governments
<p>Con Edison</p> <p>New York Power Authority (NYPA)</p> <p>NV Energy</p> <p>National Grid</p> <p>Cobb EMC co-op (GA)</p> <p>Kit Carson Electric co-op (NM)</p> <p>United Power co-op (CO)</p> <p>East River Electric Power Cooperative (MN/SD)</p> <p>Renville-Sibley co-op (MN)</p> <p>Lyon-Lincoln co-op (MN)</p> <p>Sioux Valley co-op (SD)</p> <p>Bon Homme Yankton co-op (SD)</p>	<p>Real Estate Board of New York (REBNY)</p> <p>Solar Energy Management LLC</p> <p>River Front Consulting</p> <p>UMassFive College</p> <p>Credit Union</p> <p>Northeast Solar</p> <p>PV Squared</p> <p>Co-op Power</p> <p>Christian Casillas Consultant</p> <p>Extensible Energy, Inc.</p> <p>Cliburn and Associates, LLC</p> <p>STAR Energy Services</p>	<p>Groundswell</p> <p>Partnership for Southern Equity (PSE)</p> <p>Electric Power Research Institute (EPRI)</p> <p>Underwriters Laboratories (UL)</p> <p>Clean Energy States Alliance</p> <p>Western MA Community Choice Energy Task Force</p> <p>North Carolina Clean Energy Technology Center</p> <p>Clean Energy Resource Teams</p> <p>Great Plains Institute (GPI)</p> <p>MN Rural Electric Association</p> <p>National Rural Electric Cooperative Association (NRECA)</p>	<p>Atlanta University Center Consortium (AUCC)</p> <p>Spelman College</p> <p>City University of New York (CUNY)</p> <p>University of Massachusetts Amherst</p> <p>University of Minnesota</p>	<p>Tampa Bay Regional Planning Council</p> <p>Manatee County</p> <p>Pinellas County</p> <p>City of Reno</p> <p>Nevada Governor's Office of Energy</p> <p>Rhode Island Office of Energy Resources</p> <p>Rhode Island Division of Public Utilities</p> <p>Massachusetts Clean Energy Center, Dept. of Energy, Dept. of Agriculture, Pioneer Valley Planning Commission, Franklin Regional Council of Governments, Town of Blandford, Town of Wendell, Town of Westhampton</p>

Location of SEIN Round 2 Teams by State



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**Commercial-Scale
Solar**

**Solar in Rural
Communities**

SEIN Assistance for Early Adopters

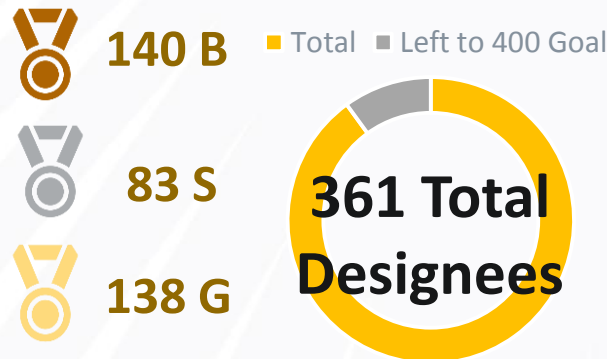


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- The SEIN program is structured to provide limited assistance to help early adopters ***adapt and apply the innovative research and analysis*** developed in the Network to their contexts
- The topics from Round 1 that are replicable and particularly suited to labs supporting replication include:
 - **Strategic Pairing of Solar and EV Charging:** What are the techno-economics and system sizing considerations of pairing solar with EV chargers?
 - **Data-driven approaches to energy planning:** What data and analytical approaches are needed to understand city-scale solar costs and benefits?
 - **Black start:** Can solar + storage be used for black start at the ISO/RTO level?
- Launch of assistance topics is scheduled for May 2020, targeting 10-12 initial efforts to broaden the reach of Innovation Network solutions

National recognition and technical assistance program for local governments to help them streamline processes and make it easier for residents and businesses to go solar.

- Uses objective criteria to designate communities that have successfully met the goals.
- Communities can receive designations of **SolSmart Gold, Silver, and Bronze.**
- Local governments can receive **no-cost technical assistance** from a team of national experts, in categories such as:
 - Permitting
 - Planning, zoning, and development
 - Inspection
 - Construction Codes
 - Solar Rights
 - Utility and Community Engagement
 - Market Development and Finance



83M people in 41 States live in SolSmart communities

Budget: ~\$15,000,000

Start/End Dates: 2016-2020

SolSmart is led by:



SolSmart Technical Assistance

- SolSmart provides 1-on-1 coaching through their Advisors Program and no-cost TA to help communities achieve SolSmart designations
- SolSmart Advisors are contracted to assist regional cohorts of communities achieve designation
- TA providers offer specific expertise in areas such as engineering, procurement, PV system design, feasibility assessments, and market analysis
- More than 95% of communities receive Technical Assistance and the average TA satisfaction rate is almost 97%
- SolSmart also provides general educational resources through webinars, issue briefings, newsletter updates, and virtual trainings.

Technical Assistance Program



National Community Solar Partnership (2019-202?)



The National Community Solar Partnership is a coalition of community solar stakeholders working to expand access to affordable community solar to every American households by 2025.

NCSP Technical Assistance

- **Individual Technical Assistance**

- Specific support to entities in markets with unique local challenges.
- Expertise from National Labs and independent third party subject matter experts
- Regular open calls to partners to apply for support of up to 100 hours.

- **Group Technical Assistance**

- Support provided to Collaboratives, groups of 10-20 stakeholders working to address common barriers through peer learning and shared resources
- Participants sign commitment letter with metric(s) to be tracked and agree to work with DOE over 2 years to develop a goal and work through an action plan
- Two Collaboratives in Spring 2020:
 - Multifamily Affordable Housing Collaborative
 - Municipal Utility Collaborative

Grid Modernization Laboratory Consortium (GMLC)



- **Grid Modernization Initiative (GMI)** works across the U.S. DOE to create the modern grid of the future.
 - Focuses on developing new architectural concepts, tools, and technologies that will better measure, analyze, predict, protect, and control the grid, as well as enable the institutional conditions that allow for rapid development and widespread adoption of these tools and technologies.
- **2019 Grid Modernization Lab Call** is an \$80M, three-year funding program (FY2020-22) that brings together DOE and the National Laboratories with companies, utilities, research organizations, state regulators, and regional grid operators to pursue critical research and development key grid modernization areas:
 1. Resilience Modeling
 2. Energy Storage and System Flexibility
 3. Advanced Sensors and Data Analytics
 4. **Institutional Support and Analysis**
 5. Cybersecurity and Physical Security
 6. Generation

4.2.2: Technical Assistance to Public Utility Commissions



Project Description

- Deliver in-depth technical assistance (TA) to public utility commissions (PUCs) to support their grid modernization or energy infrastructure initiatives
- Support PUCs through workshops, facilitated dialogues, analysis, technical review memos
- Use an annual solicitation process to identify state TA proposals.

Value Proposition

- ✓ Help state regulators address a wide array of institutional challenges associated with grid modernization, achieve increases in grid reliability/resiliency, and improve customer engagement

Team Partners

- ✓ **PI:** Peter Cappers (LBNL)
- ✓ **Other Labs:** PNNL, NREL, ANL, ORNL
- ✓ **Other Partners:** NARUC, Consultants (RAP, E3)

Project Objectives

- ✓ Deliver TA to **10-20 states for 1-2 year engagements** over 3 years
- ✓ Develop strong cross-Lab teams to deliver TA on topics in the GMLC Multi-Year Program Plan
- ✓ Convert subset of deliverables for dissemination to broader national audience

SETO Technical Assistance Programs



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National Community Solar Partnership



Technical Assistance to Public Utility Commissions (GMLC)

Who	Local governments, utilities, regional planners, solar companies, etc.	Local government/authorities with jurisdiction	Local governments, utilities, regional planners, solar companies, etc.	Public utility commissions
How	Topic-driven cycles of collaboration between teams and experts	National recognition program and technical assistance	<ul style="list-style-type: none"> Individual support to partners with specific local barriers to community solar; Group support to partners working towards similar goals 	In-depth, longer-term analytical support (12-24 months)
Why	Coordinate research and analysis to scale up innovative initiatives	Cut red tape and expand local solar market	Address persistent barriers to expanding solar access to low income communities	Provide technical support to advance solar integration and disseminate learning

Q&A

FY19 SETO FOA: Balance of Systems Soft Costs Reduction topic

Topic 3.1: Collaborative Partnerships to Address Regulatory Burdens (\$8 million)

- This topic area encourages collaborative work between various jurisdictions and private-sector facilitators to develop comprehensive, sustainable solutions that enable the country's new and developing solar markets to tackle financing and permitting issues and implement best practices and lessons learned.

Areas of Interest Include:

- Rooftop solar and solar-plus-energy-storage permitting, inspection and interconnection challenges.
- Large-scale ground-mounted solar PV and CSP siting, permitting, and environmental impact.
- Addressing solar cybersecurity challenges through strategic plans, road maps, best practices, and other decision-making tools.
- Other soft cost drivers for challenging market segments and opportunities to leverage public-private partnerships.

Solar@Scale – International City/County Management Association

BACKGROUND

- Previous projects in SETO's Soft Cost portfolio focused on reducing soft costs for residential installations

OBJECTIVES

- Convene stakeholders to identify research needs and best practices for local govts to facilitate deployment of **large-scale solar** projects.

METHODS

- Create advisory committee with local govts. and industry to collaborate on research needs and best practices related to zoning, permitting, planning, siting, community engagement
- Develop a comprehensive guidebook for use by decision-makers in local jurisdictions
- Leverage existing outreach channels and events, as well as creative new engagement strategies, to disseminate information across the country.

KEY OUTCOMES

- New research and tools will enable local jurisdictions to reduce soft costs and improve planning processes for large-scale solar deployment



Start-End Date: TBD (2020-2023)

Funding: \$1,250,000

Addressing Regulatory Burdens to Accessing Solar Among Municipal, Commercial and Institutional Customers – World Resources Institute

BACKGROUND

- Local govt. ability to meet solar energy goals is affected by wholesale power market rules
- Current utility planning processes do not enable utilities to account for customer goals

METHODS

- Use collaborative engagement models and new approaches to address wholesale market barriers to solar and ensure utility asset planning captures customer demand for solar
- Convene key partners to identify and address barriers and develop research products and other resources to encourage replication nationally

KEY OUTCOMES

- Local govts. better understand how to collaboratively engage in wholesale power market stakeholder processes
- Utilities are better enabled to incorporate customer clean energy goals into their Integrated Resource Planning

PARTNERS: Renewable Energy Buyers Alliance, Local Governments, Target

Regional Wholesale Electricity Markets in the U.S.



Start-End Date: TBD (2020-2023)

Funding: \$600,000

Enabling Solar Cybersecurity Solutions – National Association of State Energy Officials (NASEO)

BACKGROUND

- Emerging understanding of complex threat environment related to rapid growth of DER and potential cybersecurity risks

OBJECTIVES

- Provide state decision-makers and DER industry partners with tools and resources to develop actionable solar cybersecurity strategies and roadmaps

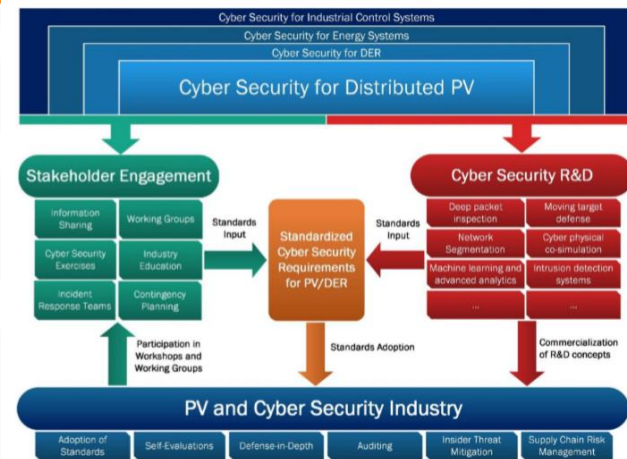
METHODS

- Establish a Multi-Stakeholder Solar Cybersecurity Advisory Group and complete a Needs Assessment
- Develop and disseminate a comprehensive Cybersecurity Solutions Toolkit

KEY OUTCOMES

- Enhanced state-level public-private cybersecurity preparedness
- New collaborative frameworks and models that can be replicated throughout the US
- Substantiable intra-/inter-state networks to collaborate on addressing cybersecurity risks for DERs.

PARTNERS: National Association of Regulatory Utility Commissioners (NARUC)



Start-End Date: TBD (2020-2023)

Funding: \$517,000

Addressing Regulatory Barriers to Tribal Adoption of Solar PV – National Renewable Energy Laboratory

BACKGROUND

- Supports tribes in engaging in the solar energy economy, and expands emerging development markets on Tribal land in the United States.

METHODS

- Interviews, in-person workshops, and an online platform will be used to engage stakeholders from state regulatory agencies, tribal governments, and electric utilities.
- Solutions-focused training materials and guidebooks will be developed, tested and deployed

KEY OUTCOMES

- Solutions will be developed to address common regulatory barriers to PV deployment on tribal land
- Increased capacity on the part of regulators/ utilities to work with Tribes and Tribal staff to tackle policy
- Solutions will enable expanded Tribal PV deployment



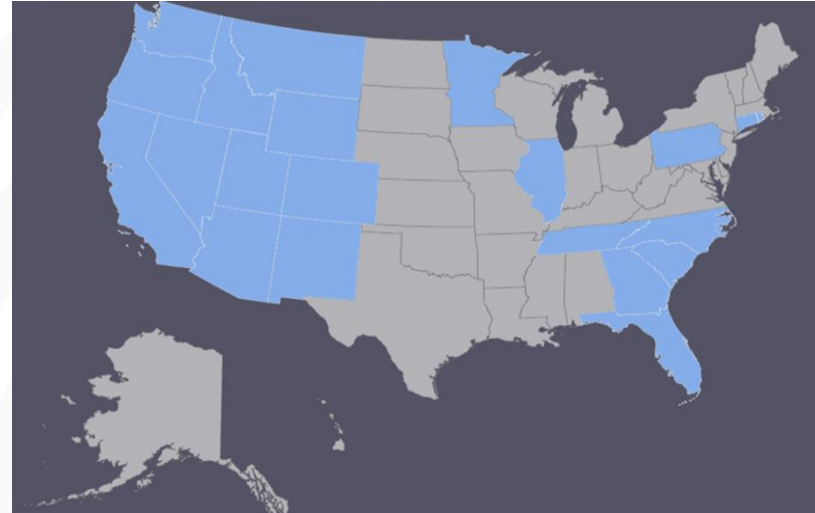
Start-End Date: 4/2020-3/2022

Funding: \$1,400,000

States Energy Strategies (SES)

The SES program provides technical assistance to states as they seek to meet their energy goals and maximize the benefits of deploying solar energy.

- **8 projects** involving **22 states**
 - 6 projects extended through June 2020
- Technical assistance provided by national labs, consulting firms, or non-profit technical assistance organizations
- Examples of technical assistance:
 - developing or using specialized **modeling tools**;
 - **cost-benefit analysis** of solar technology options;
 - structuring community solar programs;
 - solar + storage;
 - solar integration;
 - **expanding access** to solar electricity
 - comprehensive solar energy **scenario planning**



Budget: \$12,000,000

Start/End Date: 2017-2020

Minnesota Solar Pathways: Illuminating Pathways to 10% Solar – Minnesota Department of Commerce

BACKGROUND

- Modeled scenarios to reach 10% solar by 2030 in Minnesota and identified solutions to interconnection, capacity, and siting barriers.

METHODS

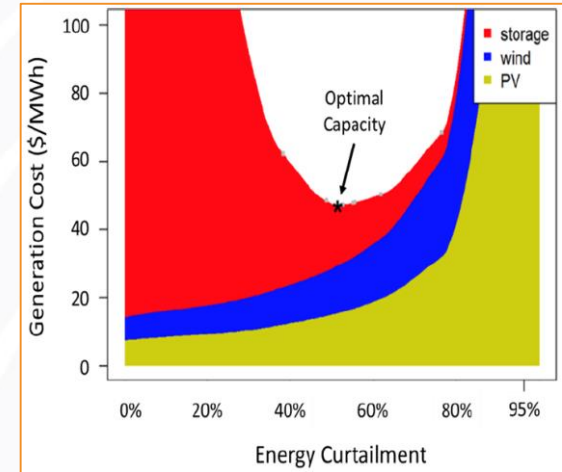
- Developed replicable model to simulate solar penetration scenarios (e.g. with storage, wind, curtailment) and effects (economic, market)
- Created tools and practices for communities to determine value and thus expedite the siting/permitting process

KEY OUTCOMES

- Capacity:** MN can achieve 10% solar by 2030, and 70% solar and wind by 2050, at a cost comparable to new natural gas.
- Cost:** Over-building and curtailing is a viable strategy and significantly less expensive than long-term or seasonal storage.
- Barriers:** Remaining barriers include: (1) Increasing hosting capacity without significant infrastructure upgrades and (2) solar energy acceptance.

PARTNERS: Clean Power Research, Great Plains Institute, Clean Energy Resource Teams, Center for Energy and Environment

Results of Curtailment



Start-End Date: 1/2017-6/2020

Funding: \$2,800,000

Solar Plus: Strategies for Oregon and Washington State – Washington Department of Commerce

BACKGROUND

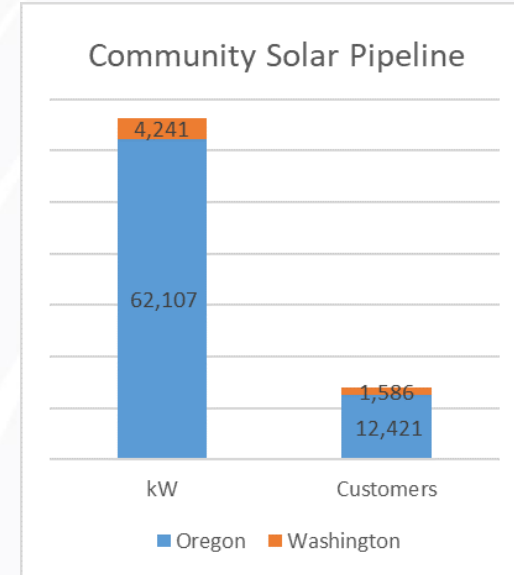
- Planning for distributed solar in WA and OR while emphasizing equity and inclusion, workforce development, community solar, and storage/resilience.

METHODS

- Community solar enrollment for 10,000 households
- Stakeholder engagement and working groups
- Solar+storage pilot projects, group purchase campaigns, and case studies of community-led plans

KEY OUTCOMES

- Community solar:** Program structure is more critical than incentives.
- Solar+storage:** Communities need more incentives to afford distributed, resilient power.
- Workforce:** Without inclusive workforce development, especially in communities of color, a lack of trained labor will constrain future solar growth.



Start-End Date: 1/2017-6/2020

Funding: \$2,600,000

Enhanced Distributed Solar PV Deployment via Barrier Mitigation or Removal in the Western Interconnection – Western Interstate Energy Board

BACKGROUND

- Institutional and technical barriers, including **interconnection**, **reliability**, and **utility rate design**, could impede distributed PV (DPV) growth in the Western Interconnection.

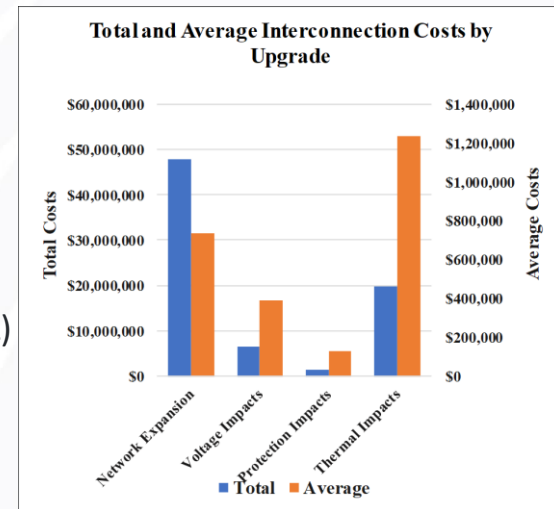
METHODS

- Technical & Strategic Advisory Committees
- **Interconnection**: interviews and best practices (NREL)
- **Reliability**: capacity expansion, production cost, power flow modeling (NREL)
- **Utility Rate Design**: FINancial impacts (FINDER) model (LBNL)
- Outreach to state **regulators** and **policymakers** on mitigation strategies

KEY OUTCOMES

- **Interconnection**: Improved information on grid upgrade costs and grid upgrade cost allocation can inform DPV adoption and reduce interconnection barriers.
- **Reliability**: IEEE 1547-2018 Cat. III ride-through criteria can improve DER performance, reduce reliability barriers.
- **Rate Design**: Alternative rate designs to net energy metering can improve utility earnings, ROE, and non-DPV customer bills, but may increase DPV customer bills and system payback times.

Interconnection Results



Start-End Date: 1/2017-6/2020

Funding: \$2,600,000

Solar PV and Real Estate*:

Big data, Analysis, and Integration with Multiple Listing Services

BACKGROUND

- Large scale PV impact on neighboring residential properties unknown.
- Rooftop PV on commercial properties have not been well-characterized.
- Residential PV real estate markets lack access to quality data.

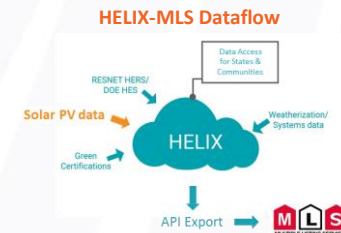
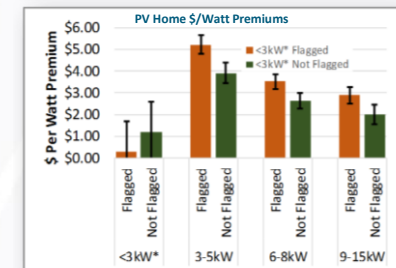
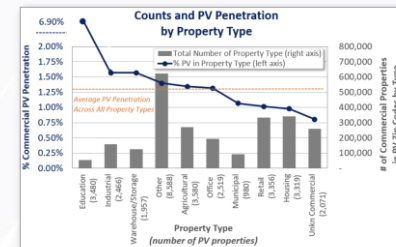
METHODS

- **Advisory group** and expert partners
- **Big datasets, analysis, modeling** (GIS, TTS, SMR Research, Fannie Mae)
- **GIS deep-learning PV detection** (Duke University)
- **Home Energy Labeling Info Exchange (HELIX)** by NEEP
- **Research dissemination.** Multiple Listing Services (MLS) integration

KEY OUTCOMES

- Appraised accurately residential PV adds \$0.70/W to home value
- Only 7% of schools have rooftop PV, the highest of any commercial building types
- Deep-learning finding solar systems with 90% accuracy
- PV records imported into HELIX: CT 30k, MA 81k, NH 5k, VT 12k

PARTNERS: LBNL (Fannie Mae, Duke University) (NEEP, ClearlyEnergy)



4.2.3 Future Electric Utility Regulation

Project Description

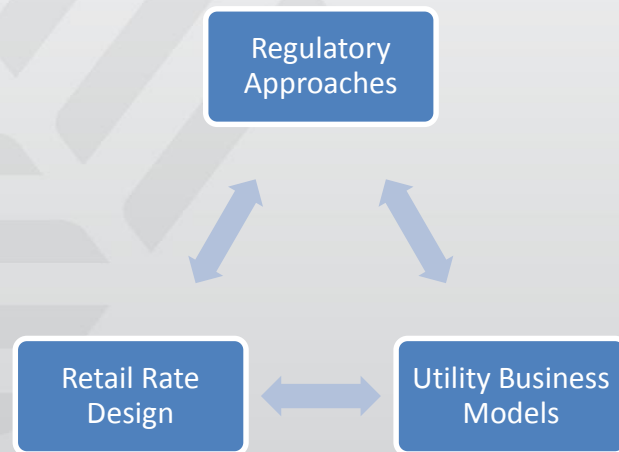
- Continuation of the **Future Electric Utility Regulation (FEUR)** reports, an innovative series of reports that taps leading thinkers with diverse perspectives on emerging regulatory issues for electric utilities
- Publication of two **multi-DER rate impacts analysis** exploring the implication of retail electricity rate reforms on distributed energy resources (DERs) and utility system economics.

Value Proposition

- ✓ Evolution and deployment of advanced grid technologies can have significant financial impacts on utilities and customers, and on the roles and responsibilities of electric utilities.
- ✓ Support state policymakers, regulators, utilities, and other stakeholders exploring changes to regulatory approaches, utility business models, and rate design

Team Partners

- ✓ **PI:** Andy Satchwell (LBNL)
- ✓ **Other Labs:** NREL
- ✓ **Other Partners:** NARUC, NRRI, and Michigan State University Institute of Public Utilities



Q&A

Conclusion – Questions for you!

Solar Analysis and Planning for Institutions continues to be an important part of SETO's Soft Costs portfolio. We welcome reviewer inputs on critical questions such as:

- Is our *Solar Analysis and Planning for Institutions* portfolio appropriately balanced and focused?
- Are there programs that are particularly effective? Where would federal resources be best invested?
- Are there stakeholder groups, technical assistance approaches, or types of educational materials that we are missing?

Next Steps

- Time to discuss after this session
- Tomorrow morning: more time to pull thoughts together and work on write ups tomorrow morning
- Discussion between all reviewers and SETO Soft Costs staff for initial feedback and thoughts on our work and direction
- Final write ups to include assisting Soft Costs Chair (Karen Wayland) with content needs

What can help us?

- Feedback on:
 - Overall portfolio and strategy
 - Project portfolio
 - How we address (or not) different soft costs
 - Gaps in our portfolio
 - How we can better engage with the community
 - Groups or individuals we should be engaging with
- Ideas for future areas of focus, funding topics and other roles for SETO
- Identification of factors which could influence our work over the next 5 years

Soft Costs Agenda (Wednesday, 4/8)

Time	Session	Location
11:00AM–12:30PM	Reviewer Roundtable and Write Up Time <i>*Garrett available for questions at 202 769 7776</i>	WebEx Link
12:30PM–12:45PM	Break	
12:45PM–2:15PM	Reviewer Roundtable with Soft Costs Staff	
2:15PM- 2:45PM	Break <i>*All reviewers besides track chair can sign off. PLEASE COMPLETE WRITE UPS</i>	
2:45PM- 3:45PM	Track Chairs and Planning & Strategy Track Discussion	
3:45PM-4:00PM	Break	
4:00PM- 5:00PM	Discussion Time for Chairs, P&S Reviewers and SETO Leadership	

Background Slides

Shared University and LMI Community Solar + Storage Micro-grid

Groundswell



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Project Team

- **Groundswell** (non-profit), Partnership for Southern Equity (PSE), Atlanta University Center Consortium (AUCC), Spelman College

Project

- Designing plan for a solar + storage micro-grid for resilience at Atlanta University campus complex combined with solar access for the local LMI community
- Engaging local community to understand needs of different stakeholders and how to share value

Innovation

- Project design and finance model for a solar + storage micro-grid that is integrated with the central plant and serving the local community
- Community engagement model for informing resilience and other community benefits

Replication Potential

- Approach to community engagement, financing, and sharing benefits with the local LMI community
- Integrating case study into engineering degree program curriculum

Analyzing the Flow of Solar Cost-Revenue Streams Across Utilities

East River Electric Power Cooperative



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Project Team

- **East River Electric Power Cooperative; University of Minnesota;** Renville-Sibley co-op (MN); Lyon-Lincoln co-op (MN); Sioux Valley co-op (SD); Bon Homme Yankton co-op (SD); Clean Energy Resource Teams; Great Plains Institute; STAR Energy Services; MN Rural Electric Association; National Rural Electric Cooperative Association

Project

- Analyzing solar cost-revenue streams between and within levels of electric cooperatives (e.g., co-op members; distribution co-ops; generation and transmission co-ops)
- Developing new organizational models for solar deployment in rural co-ops (e.g., co-op wholesale aggregators, bi-directional power supply contracts, member-owner-led community solar projects)

Innovation

- Novel solutions to better estimate true marginal costs and benefits of solar deployment between levels of co-ops within existing structures and institutional relationships
- Methodology to address multi-level flow of costs and benefits

Replication Potential

- Methodology for tracing costs and benefits at different scales and new business models can be used by the 63 generation and transmission utilities and 834 distribution co-ops across the country